These are now in one EPO document, and there are not separate patents for the Groups as was originally thought necessary in the European Patent Office.

Similarly, here in the United States, it is believed that it would be an error to require there to be three separate groups since there is substantial unity of invention between the three separate Groups as Groups II and II depend upon claim 1 and present the same underlying invention in all three Groups. Separate searches should not be required.

The following is a revision of similar arguments made in Europe, and these are presented herein for the Examiner's consideration in order that he further reflect on whether or not it would be inappropriate to maintain the restriction requirement.

Arguments against the restriction requirement

The Examiner states that the invention of Group I requires that the section of metal strip to be rolled be shorter than the circumferential length a of the rollers, and in the Examiner's opinion this feature seems to be missing in the invention of Group II.

Claim 44 which is the independent claim of Group II defines a device for producing a strip-like pre-material according to the method defined in claim 12. According to claim 12, a profile is rolled into the metal strip by sections, the profile extending over the full width of the metal strip and having a thickness varying over the length of the metal strip. Since claim 12 is a sub-claim of claim 1, the device according to claim 44 is operated in such a way that the recalled section of the metal strip is selected to be shorter than the circumferential length of the rollers. The device according to claim 44 is not only suited to operate in this way but it is especially designed to operate in this way by having provided the first and/or the second roller on their sheath surface with two or more than two circumferential segments, following each other in the circumferential direction, which are not all of them equal in contour. It is not the object of these two circumferential sections to roll different profiles successively into the metal strip. It is the object of the two or more than two circumferential segments to roll a certain single profile into a metal strip by successive rolling operations in which the different circumferential segments engage successively the same section of the metal strip (see the explanation of claim 44 on page 11, lines 7 to 20).

If the provided roller has, for example, two separated circumferential segments which follow each other in the circumferential direction of the roller and which differ in their contour, then the metal strip is at first rolled in a certain section thereof by bringing the first circumferential segment of the roller into engagement with the selected section of the strip. Thereafter, the same selected section of the metal strip is rolled by bringing the second circumferential segment of the roller into engagement with the selected section of the strip. To facilitate this, it is necessary that the metal strip is recalled between the two successive rolling steps, the recalled length of the metal strip being shorter than the circumferential length of the rollers (in accordance with claim 1), because claim 44 requires that the two successive circumferential sections of the roller, which effect the profiling of the metal strip, are arranged successively on the sheath of the roller, which is only possible if the length of the circumferential sections is shorter than the circumferential length of the rollers.

Correspondingly, claim 44 includes the same technical feature as claim 1 so that there is unity between the invention of claims 1 and 44.

Additionally, it may be considered that also the recalling of the metal strip is an essential feature of claim 1 and that claim 44 provides a drive moor for effecting this recalling in steps of predetermined length, which, as explained above, necessarily is shorter than the circumferential length of the rollers. Thus, claim 44 is ultimately dependent on claim 1 and is narrower therefrom.

Accordingly, the applicant posits that Group I and Group II relate to the same single invention and should be examined together.

As regards claim 64, the primary claim of Group III, there is not claimed a rolling device as such, but what is claimed is a rolling device as an essential means to carry out a method according to claim 12 which belongs to Group I. Thus, again claim 6 is dependent on claim 1 and is narrower thereof. In order to enable recalling of the metal strip as defined in claim 1, claim 64 teaches providing a recalling device arranged on the run-in end of the roll gap and providing the recalling device with a drive motor, particularly a servomotor, which is able to recall the metal strip by steps of predeterminable length. From that it is believed that the claims of Group III relate to the same invention

as the claims of Group I, and all should be examined together.

Finally, we wish to inform you that also the German Patent Office has granted a patent on the application No. 199 38 966.7, the priority of which has been claimed in the present case, the German patent including the same three groups of claims as the present case.

If the Examiner is unconvinced concerning the inappropriateness of the restriction requirement in view of the above comments, a provisional election of the claims of Group I is made herein.

Respectfully submitted,

Peter L. Berger (Reg. No.24,570)

LEVISOHN, LERNER, BERGER & LANGSAM, LLP
757 Third Avenue, Suite 2500
New York, New York 10017
(212) 486-7272 (phone)
(212) 486-0323 (fax)

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(54) **VERFAHREN ZUM HERSTELLEN EINES BANDFÖRMIGEN VORMATERIALS AUS METALL, INSBESONDERE EINES SOLCHEN VORMATERIALS WELCHES IN REGELMÄSSIG WIEDERKEHRENDEN ABSCHNITTEN PROFILIERT IST, UND DIE VERWENDUNG EINER VORRICHTUNG DAFÜR**

METHOD FOR PRODUCING A STRIPLIKE PRE-MATERIAL MADE OF METAL, ESPECIALLY A PRE-MATERIAL WHICH HAS BEEN PROFILED INTO REGULARLY REOCCURRING SECTIONS, AND DEVICE THEREFOR

PROCEDE DE FABRICATION D'UN PRODUIT DE DEPART METALLIQUE EN FORME DE BANDE, EN PARTICULIER D'UN PRODUIT DE DEPART PROFILE A INTERVALLES REGULIERS, ET UTILISATION D'UN DISPOSITIF PERMETTANT DE METTRE EN OEUVRE LEDIT PROCEDE

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(73) Patentinhaber: HJB Rolling Mill Technology GmbH
75417 Mühlacker (DE)

(72) Erfinder: BAUDER, Hans-Jörg
D-75417 Mühlacker (DE)

(74) Vertreter: Tweimeier, Ulrich, Dipl. Phys. et al
Patentanwalt,
Zerrennerstrasse 23-25
75172 Pforzheim (DE)

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- PATENT ABSTRACTS OF JAPAN vol. 009, no. 164 (M-395), 10. Juli 1985 (1985-07-10) & JP 60 037201 A (KAWASAKI SEITETSU KK), 26. Februar 1985 (1985-02-26)
- PATENT ABSTRACTS OF JAPAN vol. 014, no. 454 (M-1031), 28. September 1990 (1990-09-28) & JP 02 182339 A (KOBE STEEL LTD), 17. Juli 1990 (1990-07-17)

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kehrt, nach dem Verfahren gemäß Anspruch 12, wozu eine der beiden Walzen (11, 12) im Walzgerüst (2) während des Walzens kontrollierbar auf und ab verlagerbar ist, und zwar um einen durch das gewünschte Profil bestimmten Weg in Abhängigkeit vom Vorschub des Metallbandes (16), und wozu für die auf der Einlaufseite des Walzspaltes (13) vorgesehene Rückholvorrichtung (5, 52) ein Antriebsmotor (7, 54) vorgesehen ist, welcher ein Zurückholen des Metallbandes (16) in Schritten von vorgebbarer Länge ermöglicht, insbesondere ein Servomotor.

65. Die Verwendung einer Vorrichtung mit einem Walzgerüst (2) mit zwei Walzen (11, 12), welche einen Walzspalt (13) begrenzen, und mit einer auf der Einlaufseite des Walzspaltes (13) angeordneten Rückholvorrichtung (5, 52) für ein zu walzendes Metallband (16), zum Herstellen eines bandförmigen Vormaterials aus Metall mit hoher Oberflächengüte nach dem Verfahren gemäß Anspruch 1, wozu für die auf der Einlaufseite des Walzspaltes (13) vorgesehene Rückholvorrichtung (5, 52) ein Antriebsmotor (7, 54) vorgesehen ist, welcher ein Zurückholen des Metallbandes (16) in Schritten von vorgebbarer Länge ermöglicht, insbesondere ein Servomotor.

66. Die Verwendung einer Vorrichtung nach Anspruch 64 oder 65, in welcher auf der Auslaufseite des Walzspaltes (13) eine Ziehvorrichtung (6, 53) für das bandförmige Vormaterial angeordnet ist.

67. Die Verwendung einer Vorrichtung nach Anspruch 64, 65 oder 66, in welcher die Rückholvorrichtung eine erste Haspel (5) ist.

68. Die Verwendung einer Vorrichtung nach Anspruch 64, 65 oder 66, in welcher die Rückholvorrichtung eine erste Zangenvorschubvorrichtung (52) ist.

69. Die Verwendung einer Vorrichtung nach Anspruch 66, in welcher die Ziehvorrichtung eine zweite Haspel (6) zum Aufwickeln des bandförmigen Vormaterials ist.

70. Die Verwendung einer Vorrichtung nach Anspruch 66, in welcher die Ziehvorrichtung eine zweite Zangenvorschubvorrichtung (53) ist.

71. Die Verwendung einer Vorrichtung nach einem der Ansprüche 60 bis 70, in welcher auch für die auf der Auslaufseite des Walzspaltes (13) vorgesehene Ziehvorrichtung (6, 53) ein Servomotor (8, 55) vorgesehen ist.

72. Die Verwendung einer Vorrichtung nach Anspruch 71, in welcher ein elektronisches Steuergerät (43) vorgesehen ist, in welchem die für ein vorgesehenes Profil erforderliche Verlagerung der einen Walze (12) als Kurve vorzugsweise digital gespeichert ist und daß mit diesem Steuergerät (43) die Servomotoren (7, 8; 54, 55) der Rückholvorrichtung (5, 52) und der Ziehvorrichtung (6, 53), ein oder zwei Servomotoren (41, 42) für das Drehen der beiden Walzen (11, 12) und ein oder mehrere mit einem inkrementalen Drehgeber (44) gekoppelte Verstellantriebe (32, 33, 34) für die verlagerbare Walze (12) verbunden sind.

73. Die Verwendung einer Vorrichtung nach einem der Ansprüche 59 bis 72, in welcher zum Walzen in beiden Richtungen die Drehrichtung der beiden Walzen (11, 12) umkehrbar ist.

74. Die Verwendung einer Vorrichtung nach einem der Ansprüche 50 bis 57, in welcher die verlagerbare Walze (12) einen achsparallelen Einschnitt (45) hat.

Claims

1. Method for producing a strip-like pre-material from metal by means of rollers (11, 12) of a roll stand (2), which define a roll gap (13), by rolling the metal strip in two or more than two rolling steps, characterised in that the metal strip (16) is rolled discontinuously in successive steps between the same two rollers (11, 12), for which purpose the metal strip (16) is recalled, after such a section of the metal strip (16) has been rolled, and the recalled section is rolled once again, the recalled section of the metal strip (16) being selected to be shorter than the circumference of the rollers (11, 12).

2. The method as defined in Claim 1, characterised in that the metal strip (16) is rolled also during the recalling step.

3. The method as defined in Claim 1 or 2, characterised in that the length of the recalled sections of the metal strip (16) is selected to be maximally equal to half the circumference of the rollers (11, 12).

4. The method as defined in Claim 1, 2 or 3, characterised in that the two rollers (11, 12) are selected to have a cylindrical shape.

5. The method as defined in any of the preceding claims, characterised in that the last rolling step in each of the recalled sections of the metal strip (16) is carried out between circumferential segments of the two rollers (11, 12) that have not yet acted on the respective section of the metal strip

(16) in the one or more preceding rolling steps.

6. The method as defined in Claim 5, **characterised in that** step-by-step repeated rolling of the respective section of the metal strip (16) is carried out in such a way that of the circumferential segments of the two rollers (11, 12) that act on the respective section of the metal strip (16), the circumferential segment of the two rollers (11, 12) that acts on the respective section of the metal strip (16) in the first step has carried out the greatest number of rolling steps, and the circumferential segment of the rollers (11, 12) that acts on the respective section of the metal strip (16) in the last rolling step has carried out the smallest number of rolling steps.

7. The method as defined in Claim 6, **characterised in that** the smallest number is selected to be zero.

8. The method as defined in Claim 5, 6 or 7, **characterised in that** the shell surface of the two rollers (11, 12) is reworked to restore the original surface quality when a predetermined number of rolling steps has been reached by those circumferential segments with which the smallest number of rolling steps has been carried out.

9. The method as defined in Claim 8, **characterised in that** the predetermined number of rolling steps is adjusted to the desired surface quality of the strip-like pre-material.

10. The method as defined in any of the preceding claims, **characterised in that** by rolling the metal strip (16) it is simultaneously equalised.

11. The method as defined in any of the preceding claims, **characterised in that** proofs for coins and medals are produced from the pre-material.

12. The method as defined in any of the preceding claims, **characterised in that** the profile is rolled into the metal strip (16) by sections, the profile extending over the full width of the metal strip (16) and having a metal-strip thickness (16) varying over the length of the metal strip (16).

13. The method as defined in Claim 12, **characterised in that** a periodically recurring profile is rolled into the metal strip (16).

14. The method as defined in any of the preceding claims, **characterised in that** the rollers (11, 12) and the metal strip (16) are accelerated and braked in the respective rolling steps in synchronism and to the same degree.

15. The method as defined in any of Claims 1 to 3, 10 and 12 to 14, **characterised in that** for producing a strip-like pre-material with a profile recurring in successive sections of the pre-material, a roll stand (2) is used which permits the height of the roll gap (13) to be varied, and that the sections of the metal strip (16) to be profiled are passed through the roll gap (13) in recurring steps of predetermined lengths (21) until the depth of the desired profile of the pre-material has been reached in the respective section of the metal strip (16).

16. The method as defined in Claims 12 to 15, **characterised in that** a profile is rolled into the recalled section of the metal strip (16) in two or more than two rolling steps.

17. The method as defined in Claims 12 to 16, **characterised in that** the profile is rolled into the metal strip (16) from above.

18. The method as defined in Claims 12 to 16, **characterised in that** the profile is rolled into the metal strip (16) from below.

19. The method as defined in Claims 12 to 16, **characterised in that** a profile is rolled into the metal strip (16) from above and from below.

20. The method as defined in Claims 12 to 19, **characterised in that** the metal strip (16) is merely reduced in thickness, but not yet profiled, in a first rolling step.

21. The method as defined in Claim 20, **characterised in that** the metal strip (16) is equalised in the first rolling step.

22. The method as defined in Claim 20 or 21, **characterised in that** the reducing step is followed by one or more profiling steps between the same two rollers (11, 12).

23. The method as defined in Claim 20, 21 or 22, **characterised in that** the length (L2) of the reducing step is greater than the length (L1) of the next following profiling step.

24. The method as defined in any of Claims 20 to 23, **characterised in that** the metal strip (16) is recalled, following the reducing step, by a length smaller than the length (L2) of the reducing step and greater than the length (L1) of the next following profiling step in the same section of the metal strip (16).

25. The method as defined in any of Claims 12 to 24, **characterised** by the use of a roll stand (2) in which at least one of the two rollers (12) comprises in its

shell surface a profiled segment (35, 40) with a contour which, in combination with the contour of the other roller (11), defines the roll gap (13).

26. The method as defined in Claim 25, characterised in that prior to rolling a profile, the metal strip (16) is first equalised in the roll gap (13) between the same rollers (11, 12) in steps of a length (L2) not smaller than the length (L1) of the first profiling step, with moderate reduction in thickness, is then recalled by a step equal to at least the length (L1) of the first profiling step and maximally equal to the second length (L2), whereafter the profile is rolled into the recalled section of the metal strip (16), and that the rollers (12) for equalising the metal strip (16) comprise on their shell surface a cylindrical circumferential segment (36) which is separated, if necessary, from the profiled circumferential segments (35, 40) that exhibit a non-cylindrical contour.

27. The method as defined in any of Claims 12 to 26, characterised in that one roller (12) of the roll stand (2) is displaced during the rolling process of the metal strip (16) for varying the height of the roll gap (13).

28. The method as defined in Claim 27, characterised in that the upper or the lower roller (11, 12) are selectively displaced during the rolling process.

29. The method as defined in Claim 27, characterised in that the respective roller (11, 12) is displaced by means of a servo drive (32, 34, 44).

30. The method as defined in Claim 29, characterised in that one or two electric motors (34) or one or two short hydraulic cylinders are used for the servo drive.

31. The method as defined in any of Claims 27 to 30, characterised in that the displacement of the roller (12) is effected by means of a programme-controlled drive (32, 33, 34, 44), the profile to be produced in the respective rolling step being stored in a programme-controllable control unit (43) as control curve for the drive (32, 33, 34, 44) which effects the displacement of the roller (12).

32. The method as defined in any of Claims 27 to 31, characterised in that one of the rollers, specifically the upper roller (12), has a notch (45) parallel to its axis.

33. The method as defined in any of the preceding claims, characterised in that the two rollers (11, 12) are driven step by step and in synchronism with the feeding motion of the metal strip (16).

34. The method as defined in any of the preceding claims, characterised in that the two rollers (11, 12) are differently rotated during the recalling action of the metal strip (16).

35. The method as defined in any of Claims 15 to 32, characterised in that a relieved portion (37, 38, 39) is provided in the shell surface of the rollers (11, 12), between the circumferential segments (35, 36, 40) effective during the rolling process, which relieved portion extends over a circumferential angle such that the next following circumferential segment (35, 36, 40) to become active during the rolling process will cut into the metal strip (16) only after the preceding circumferential segment of the metal strip (16), active during the rolling process, has released the metal strip (16).

36. The method as defined in any of the preceding claims in combination with Claim 11 or 25, characterised in that the thickness of the metal strip (16) is reduced during the equalising step by a dimension in the order of one tenth of the thickness.

37. The method as defined in any of the preceding claims, characterised in that the metal strip (16) to be rolled is unwound from a first coiler (5) and the rolled metal strip (16) is wound up on a second coiler (6), and that the rotational speed of the rollers (11, 12) and the circumferential speed of the second coiler (16) are mutually matched, especially in the phase when the rollers (12, 13) cut into the metal strip (16).

38. The method as defined in any of the preceding claims, characterised in that cutting-in by a roller (12) is effected at reduced rotational speed of the roller (12) and, correspondingly, reduced feeding speed of the metal strip (16) and that the movements are then accelerated.

39. The method as defined in Claims 1 to 38, characterised in that the metal strip (16) is recalled using a first pair of grippers (52).

40. The method as defined in Claim 39, characterised in that the metal strip (16) is advanced by the first pair of grippers (52) also for rolling.

41. The method as defined in Claim 39 or 40, characterised in that the metal strip (16) is pulled, during rolling, by a second pair of grippers (53) engaging that section of the metal strip (16) that exits from the roll gap (13).

42. The method as defined in any of the preceding claims, characterised in that a tensile stress is constantly maintained in the metal strip (16), during

rolling just as during the recalling action.

43. The method as defined in any of the preceding claims, characterised in that the width of the metal strip (16) is selected in such a way that two or more than two of the objects, that are intended to be punched out from the pre-material formed by rolling, can be punched out one beside the other.

44. The use of a device having a roll stand (2) with two rollers (11, 12) that define a roll gap (13) the height of which can be varied,
and with a recalling device (5, 52) for a metal strip (16) to be rolled, arranged on the run-in end of the roll gap (13),
for producing a strip-like pre-material from metal, with a profile which recurs in successive sections of the pre-material, according to the method defined in Claim 12,
for which purpose the first (11) and/or the second roller (12) are provided on their shell surface with two or more than two circumferential segments (35, 36, 40), following each other in the circumferential direction, which are not all of them equal in contour, and for which purpose a drive motor (7, 54) is provided for the recalling device (5, 52) arranged on the run-in end of the roll gap (13), for recalling the metal strip (16) by steps of predeterminable length.

45. The use of a device as defined in Claim 44, wherein the recalling device is a first coiler (5).

46. The use of a device as defined in Claim 44, wherein the recalling device is a gripper feed mechanism (52).

47. The use of a device as defined in any of Claims 44 to 46, wherein a pulling device (6, 53) for the strip-like pre-material is provided on the run-out end of the roll gap (13).

48. The use of a device as defined in Claim 47, wherein the pulling device is a second coiler (6) for winding up the strip-like pre-material.

49. The use of a device as defined in Claim 47, wherein the pulling device is a second gripper feed mechanism (53).

50. The use of a device as defined in any of Claims 44 to 49, wherein the two rollers (11, 12) can be driven one independently from the other.

51. The use of a device as defined in any of Claims 44 to 50, wherein at least one roller (11, 12) has a cylindrical circumferential segment (36).

52. The use of a device as defined in Claim 51, wherein both rollers (11, 12) have a cylindrical circumferential segment (36).

53. The use of a device as defined in any of Claims 44 to 52, wherein the roll stand (2) is designed as equalising rolling mill.

54. The use of a device as defined in any of Claims 44 to 53, wherein the drive motor (7, 52) for the recalling device (5, 52) provided on the run-in end of the roll gap (13) is an electric servomotor.

55. The use of a device as defined in any of Claims 44 to 54, wherein the pulling device (6, 53) provided on the run-out end of the roll gap (13) is driven by an electric servomotor (8, 55).

56. The use of a device as defined in any of Claims 44 to 55, wherein the two rollers (11 and 12) are each loaded on their side facing away from the roll gap (13) by one supporting roller (14, 15) whose roll necks (25) are pre-stressed in their roll neck bearings (26) for reducing their bearing play.

57. The use of a device as defined in any of Claims 44 to 55, wherein the first roller (11) and the second roller (12) are not loaded by supporting rollers, but rather the roll necks (21, 22) of the first roller (11) and of the second roller (12) are pre-stressed in their roller neck bearings (22) for reducing their bearing play.

58. The use of a device as defined in any of Claims 44 to 47, wherein the first and the second rollers (11, 12) are discontinuously driven in a manner such that they are driven, during the strip feed, in synchronism with the pulling device (6, 53) provided on the run-out end of the roll gap (13), whereas they are temporarily stopped and/or positioned individually or jointly by forward or reverse rotation when the recalling device (5, 52) provided on the run-in end of the roll gap (13) is driven in the reverse sense for recalling the metal strip (16).

59. The use of a device as defined in any of Claims 44 to 58, wherein the circumferential speed of the two rollers (11, 12) and the speed of the pulling device (6, 53), preferably also the speed of the recalling device (5, 52) can be controlled in arbitrary fashion.

60. The use of a device as defined in any of Claims 44 to 59, wherein one of the two rollers (12, 13), preferably the upper roller (12), can be moved up and down in controlled fashion during the rolling process.

61. The use of a device as defined in Claim 60, wherein the one or the other roller (11, 12) can be selectively

moved up and down in controlled fashion during the rolling process.

62. The use of a device as defined in Claim 60 or 61, wherein one or more servo drives (32, 33, 34, 44) are provided for effecting the displacement of the respective roller (11, 12).

63. The use of a device as defined in Claim 62, wherein the servo drives (32, 33, 34, 44) comprise one electric motor (34) or one or two short hydraulic cylinders each.

64. The use of a device having a roll stand (2) with two rollers (11, 12) that define a roll gap (13) the height of which can be varied,
and with a recalling device (5, 52) for a metal strip (16) to be rolled, arranged on the run-in end of the roll gap (13),
for producing a strip-like pre-material from metal, with a profile which recurs in successive sections of the pre-material, according to the method defined in Claim 12,
for which purpose one of the two rollers (11, 12) can be moved up and down in the roll stand (2) in controlled fashion during the rolling process, by a distance determined by the desired profile, in response to the feeding motion of the metal strip (16),
and for which purpose a drive motor (7, 54), specifically a servomotor, is provided for the recalling device (5, 52) arranged on the run-in end of the roll gap (13), for recalling the metal strip (16) by steps of predeterminable length.

65. The use of a device having a roll stand (2) with two rollers (11, 12) that define a roll gap (13),
and with a recalling device (5, 52) for a metal strip (16) to be rolled, arranged on the run-in end of the roll gap (13),
for producing a strip-like pre-material from metal with high surface quality, according to the method defined in Claim 1,
for which purpose a drive motor (7, 54), specifically a servomotor, is provided for the recalling device (5, 52) arranged on the run-in end of the roll gap (13), for recalling the metal strip (16) by steps of predeterminable length.

66. The use of a device as defined in Claim 64 or 66, wherein a pulling device (6, 53) for the strip-like pre-material is provided on the run-out end of the roll gap (13).

67. The use of a device as defined in Claim 64, 65 or 66, wherein the recalling device is a first coiler (5).

68. The use of a device as defined in Claim 64, 65 or 66, wherein the recalling device is a gripper feed device (52).

69. The use of a device as defined in Claim 66, wherein the pulling device is a second coiler (6) for winding up the strip-like pre-material.

70. The use of a device as defined in Claim 66, wherein the pulling device is a second gripper feed mechanism (53).

71. The use of a device as defined in any of Claims 60 to 70, wherein a servomotor (6, 55) is provided also for the pulling device (6, 53) provided on the run-in end of the roll gap (13).

72. The use of a device as defined in Claim 71, wherein an electric control unit (43) is provided in which the displacement of the one roller (12) required for an intended profile is, preferably digitally, stored as curve and wherein the servomotors (7, 8; 54, 55) of the recalling device (5, 52) and of the pulling device (6, 53), one or two servomotors (41, 42) for rotating the two rollers (11, 12), and one or more actuating drives (32, 33, 34) for the displaceable roller (12) coupled with an incremental rotary transducer (44), are connected to said control unit (43).

73. The use of a device as defined in any of Claims 59 to 72, wherein the sense of rotation of the two rollers (11, 12) can be reversed for rolling in both directions.

74. The use of a device as defined in any of Claims 50 to 57, wherein the displaceable roller (11) has a notch (45) parallel to its axis.

Revendications

1. Procédé de fabrication d'une matière brute en forme de ruban en métal à l'aide de rouleaux (11, 12) d'un laminoir (2), qui délimitent une emprise de laminage (13), le ruban métallique étant laminé en deux ou plus de deux étapes de laminage,
caractérisé en ce que le ruban métallique (16) est laminé en portions successives entre les deux mêmes rouleaux (11, 12) de façon discontinue, le ruban métallique (16) étant reculé après un laminage d'une telle portion de ruban métallique (16), la portion retirée du ruban métallique étant à nouveau laminé et la portion retirée du ruban métallique (16) étant plus courte que le périmètre des rouleaux (11, 12).

2. Procédé selon la revendication 1, caractérisé en ce que le ruban métallique (16) est aussi laminé lors du retrait.